

respectfully submit that one skilled in the art would recognize that Teflon is a brand name for polytetrafluoroethylene. Claims 13-20 depend from Claim 11. For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 11 and 13-20 be withdrawn.

The rejection of Claims 11-17, 19, and 20 under 35 U.S.C. § 103 as being unpatentable over Stanley et al. (GB 2,095,170) in view of McCloskey (U.S. Pat. No. 4,111,499) is respectfully traversed

Stanley et al. describe a composite article 10 in the form of a molded laminate bushing for use, for example, in a variable stator vane assembly. Bushing 10 is fabricated with a pair of outer bearing portions 12 and an intermediate lamination 14. Lamination 14 is a glass fiber element such as glass fiber clot. Each lamination 12 is a compound woven fabric such as glass fibers and interwoven low friction fiber material such as PTFE fibers. More specifically, at line 58 through line 69 Stanley et al. describe that each lamination 12 comprises a compound fabric “woven as to have substantially low friction fibers exposed at the outer surface 16...[which] dos not bond readily with the material of the body 14....”

McCloskey describes a bearing liner formed of a mixture of thermosetting blended and unblended resins and particles of a self-lubricating, heat resistant plastic material, such as Teflon. A resin material is deposited to a backing material by painting, spraying, or knife coating. The backing material may be fabricated from a woven fabric formed of a plurality of threads of materials including Dacron, Nomex, fiberglass, or aluminum foil. Pressure and heat are applied to cure the bearing liner and to lock the Teflon particles within the cured resin. At column 5, lines 1-3, McCloskey recites that “[s]ince the Teflon particles are locked in the cured resin...the liner does not exhibit the “spring” which characterized prior art woven fabric liners.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Stanley et al. according to the teachings of McCloskey. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Stanley et al. nor McCloskey, considered alone or in combination,

describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Stanley et al. with McCloskey because there is no motivation to combine the references suggested in the art. Rather, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Only the conclusory statement that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention, to have formed the bearing of Stanley et al. using a polyimide resin comprising Teflon, in light of the teachings of McCloskey..." suggests combining the disclosures.

Furthermore, Applicants respectfully submit that the prior art teaches away from each other. More specifically, at line 58 through line 69 Stanley et al. describe that each lamination 12 comprises a compound fabric "woven as to have substantially low friction fibers exposed at the outer surface 16...[which] does not bond readily with the material of the body 14...." However, in contrast to Stanley et al., McCloskey describes impregnating a bearing liner with a resin material that includes a low frictional material. Accordingly, Applicants respectfully submit McCloskey teaches away from Stanley, and as such, there is no suggestion or motivation to combine Stanley et al. with McCloskey and Viola et al.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Although it is asserted within the Office Action that Stanley et al. teach the present invention except for disclosing the polyimide resin comprises Teflon, and that McCloskey discloses impregnating a polyimide resin matrix, no motivation nor suggest to combine the prior art disclosures has been shown. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this

reason alone, Applicants request that the Section 103 rejection of Claims 11, 13-17, 19, and 20 be withdrawn.

Further, and to the extent understood, none of Stanley et al., McCloskey, or Viola et al., considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 11 recites a method for manufacturing a bearing element comprising the steps of “forming a plurality of layers from a combination of a first material and a second material, wherein a first of said layers formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of said layers is formed against the first layer and is formed from a single material...impregnating each of the bearing element plurality of layers with a polyimide resin comprising Teflon powder.”

Neither Stanley et al. nor McCloskey, considered alone or in combination, describe or suggest a method for manufacturing a bearing element including the steps of forming a plurality of layers from a combination of a first material and a second material, wherein a first of said layers formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of said layers is formed against the first layer and is formed from a single material, in combination with the step of impregnating each of the bearing element plurality of layers with a polyimide resin comprising Teflon. Specifically, neither Stanley et al. nor McCloskey, considered alone or in combination, describe or suggest impregnating a woven bearing element such that each of a plurality of layers are impregnated with a polyimide resin that includes Teflon powder. Rather, in contrast to the present invention, Stanley et al. describe forming a laminate bushing such that low frictional materials are predominately present only across an exterior surface of the bushing element, and not between adjacent layers, and in contrast to Stanley et al., McCloskey describes forming a bearing liner from a plurality of independent layers that are compressed into each other after a resin having low-frictional properties is applied to a surface of the bearing liner. Accordingly, for at least the reasons set forth above, Claim 11 is submitted to be patentable over Stanley et al. in view of McCloskey.

Claim 12 has been canceled. Claims 13-17, 19, and 20 depend from independent Claim 11. When the recitations of Claims 13-17, 19, and 20 are considered in combination

with the recitations of Claim 11, Applicants submit that dependent Claim 13-17, 19, and 20 likewise are patentable over Stanley et al. in view of McCloskey.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 11, 13-17, 19, and 20 be withdrawn.

The rejection of Claim 18 under 35 U.S.C. § 103 as being unpatentable over Stanley et al. in view of McCloskey and further in view of Viola et al. (U.S. Pat. No. 3,873,168) is respectfully traversed.

Stanley et al. and McCloskey are described above. Viola et al. describe a washer 10 including a pair of outer bearing portions 12 and a body 14. In the preferred embodiment, body 14 is fabricated from a layer of woven glass and a pair of layers of woven graphite. Viola et al. recite that graphite fibers facilitate providing thermal insulation to washer 10. Bearing portions 12 are bonded to each side of body 14 by a resin that is impregnated in each portion 12 and body 14. In an alternative embodiment, carbon fibers replace the graphite fibers. To facilitate enhancing the life and anti-friction characteristics of the outer surface of washer 10, a coating 18 is applied to bearing portion 12.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify either Stanley et al. or McCloskey according to the teachings of Viola et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Stanley et al., McCloskey, or Viola et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine either Stanley et al. or McCloskey with Viola et al. because there is no motivation to combine the references suggested in the art. Rather, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Only the conclusory statement that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention, to have formed the bearing of Stanley et al./McCloskey using carbon fibers, in light of the teachings of Viola et al..." suggests combining the disclosures. Applicants respectfully submit however, that the

prior art teaches away from the present invention. More specifically, none of Stanley et al., McCloskey, or Viola et al., considered alone or in combination, describe or suggest forming a bearing element from a plurality of layers from a combination of a first material and a second material, wherein a first of the layers is formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of the layers is formed from a single material, in combination with the step of impregnating the bearing element with a polyimide resin comprising Teflon. Accordingly, Applicants respectfully submit that there is no suggestion or motivation to combine Stanley et al. or McCloskey with Viola et al.

Applicants further submit that the prior art teaches away from each other. More specifically, at line 58 through line 69 Stanley et al. describe that each lamination 12 comprises a compound fabric “woven as to have substantially low friction fibers exposed at the outer surface 16...[which] does not bond readily with the material of the body 14....” However, in contrast to Stanley et al., both McCloskey and Viola et al. describe impregnating a bearing liner with a resin material that includes a low frictional material. Accordingly, Applicants respectfully submit McCloskey teaches away from Stanley, and as such, there is no suggestion or motivation to combine Stanley et al. with McCloskey.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants’ disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants’ disclosure. In re Vaack, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Although it is asserted within the Office Action that Stanley et al. teach the present invention except for disclosing the polyimide resin comprises Teflon, and that McCloskey discloses impregnating a polyimide resin matrix, no motivation nor suggest to combine the prior art disclosures has been shown. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to

deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection of Claim 18 be withdrawn.

Further, and to the extent understood, none of Stanley et al., McCloskey, or Viola et al., considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 18 depends from Claim 11 which recites a method for manufacturing a bearing element comprising the steps of “forming a plurality of layers from a combination of a first material and a second material, wherein a first of said layers formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of said layers is formed against the first layer and is formed from a single material...impregnating each of the bearing element plurality of layers with a polyimide resin comprising Teflon powder.”

None of Stanley et al., McCloskey, or Viola et al., considered alone or in combination, describe or suggest a method for manufacturing a bearing element including the steps of forming a plurality of layers from a combination of a first material and a second material, wherein a first of said layers formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of said layers formed from a single material, and impregnating each of the bearing element plurality of layers with a polyimide resin comprising Teflon powder. Specifically, none of Stanley et al., McCloskey, nor Viola et al. considered alone or in combination, describe or suggest impregnating a woven bearing element such that each of a plurality of layers are impregnated with a polyimide resin that includes Teflon powder. Rather, in contrast to the present invention, Stanley et al. describe forming a laminate bushing such that low frictional materials are predominately present only across an exterior surface of the bushing element, and not between adjacent layers, and in contrast to Stanley et al., McCloskey and Viola describe forming a bearing liner from a plurality of independent layers that are compressed into each other after a resin having low-frictional properties is applied to a surface of the bearing liner. Accordingly, for at least the reasons set forth above, Claim 11 is submitted to be patentable over Stanley et al. and McCloskey in view of Viola et al.

Claim 18 depends from independent Claim 11. When the recitations of Claim 18 are considered in combination with the recitations of Claim 11, Applicants submit that dependent Claim 18 likewise is patentable over Stanley et al. and McCloskey in view of Viola et al.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Mesing et al.

Serial No.: 09/821,570

Filed: March 29, 2001

For: VARIABLE VANE SEAL AND WASHER  
MATERIALS

Art Unit: 3726

Examiner: Compton, E.

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**SUBMISSION OF MARKED UP PARAGRAPHS AND CLAIMS**

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Submitted herewith are marked up paragraphs and Claims in accordance with 37 C.F.R. §1.121(b)(1)(ii) 37 C.F.R. §1.121(c)(1)(ii):

IN THE SPECIFICATION

Please delete the paragraph beginning on page 6 at line 21 and ending on page 7 at line 3, and replace with the following replacement paragraph:

First layer 302 and third layer 306 are fabricated from Teflon (polytetrafluoroethylene) fibers and glass fibers woven into the form of a mat. Second layer 304 is fabricated from glass fibers which are also woven into the form of a mat. The Teflon and glass fibers utilized in the fabrication of first layer 302 and third layer 306 are woven such that exterior surfaces 314 and 318 include mostly Teflon fibers while interior surfaces 312 and 316 include mostly glass fibers. The Teflon fibers on exterior surfaces 314 and 318 enhance the low coefficient of friction of bearing component 300 and the glass fibers on interior surfaces 312 and 316 allow for better adhesion of first layer 302 and third layer 306 to second layer 304. Alternatively, layers 302, 304, and 306 may be braided with first layer 302 and third layer 306 fabricated from Teflon fibers and carbon fibers, and second layer 304 fabricated from carbon fibers.



IN THE CLAIMS

Please cancel Claim 16.

11. (twice amended) A method for manufacturing a bearing element comprising the steps of:

forming a plurality of layers from a combination of a first material and a second material, wherein a first of said layers formed from a plurality of materials comprising at least one of [Teflon] polytetrafluoroethylene fibers, glass fibers, carbon fibers, and combinations thereof, and wherein a second of said layers is formed against the first layer and is formed from a single material;

forming the bearing element from the plurality of layers; and

impregnating each of the bearing element plurality of layers with a polyimide resin comprising [Teflon] polytetrafluoroethylene powder.

17. (once amended) A method in accordance with Claim 13 wherein:

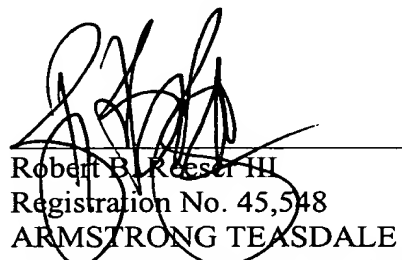
the first layer comprises [Teflon] polytetrafluoroethylene fibers and glass fibers;

the second layer comprises glass fibers;

the third layer comprises [Teflon] polytetrafluoroethylene fibers and glass fibers; and

the glass fibers are coated with an epoxy sizing.

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